

NEW RECORDS AND SPECIES OF NEOTROPICAL BARK BEETLES (SCOLYTIDAE: COLEOPTERA)¹

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While preparing a taxonomic review of the bark and ambrosia beetles (Scolytidae) of Costa Rica, it was necessary to examine all available species of this group from Mexico, all of Central America, and northern South America. As a result, a large number of species new to science were recognized from areas outside of Costa Rica. In order to make names available for these species to facilitate this and other work, 20 species new to science are described below. The new species represent the genera *Cnesinus* (11), *Leperisinus* (1), *Chramesus* (5), *Phloeotribus* (1), and *Chaetophloeus* (2). The type series of these species were collected in the following countries: Mexico (7), Guatemala (4), Honduras (3), Panama (4), and Colombia (2).

Cnesinus elegantis, n. sp.

This species is very closely related to *elegans* Blandford, but is easily distinguished by the larger size, by the more strongly strigose pronotum, by the more coarsely, deeply punctured declivital interspaces, and by the more distinctly striate elytral declivity.

FEMALE.—Length 3.3 mm. (paratypes 3.0-3.4 mm.). 2.7 times as long as wide; color brown.

Frons strongly, transversely impressed at level of antennal bases, convex above, impressed area with a pair of sublateral calluses on either side of deepest point of impression, epistomal callus evident and armed by a pair of rather widely placed, large, pointed tubercles larger than those of *elegans*; surface reticulate and minutely, sparsely punctured; vestiture restricted to sides below level of antennal bases, and epistomal area, fine, hairlike; eyes separated by a distance equal to twice the greatest width of an eye.

Pronotum 1.06 times as long as wide; sides widest in front of middle; surface with closely set, deep, elongate punctures, more than half longitudinally confluent; glabrous.

Elytra 1.8 times as long as wide, 1.9 times as long as pronotum; sides straight and subparallel to declivital base, rather broadly rounded behind; striae moderately impressed, the punctures rather small, deep, separated by distances equal to their own diameters; interstriae twice as wide as striae, the punctures variable in size, rather confused. Declivity rather steep, impressed between third interspaces; striae not impressed, the punctures clearly, rather deeply impressed; interspace 1 moderately elevated, 2 flat and wider than 1 or 3; all

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interspaces armed by a few fine, rounded, irregularly placed granules. Vestiture largely confined to declivity, consisting of long, rather fine interstitial bristles, and shorter striae and interstitial hair; the longest bristles equal in length to combined widths of interspaces 2 and 3.

MALE.—Similar to female except frontal callus slightly more prominent and unarmed.

TYPE LOCALITY.—Volcan Zunil, Quezaltenango Prov., Guatemala.

HOST.—*Quercus* sp.

TYPE MATERIAL.—The female holotype, male allotype, and 31 paratypes were collected from oak twigs at the type locality on May 27, 1964, at an elevation of 1,000 m. by S. L. Wood.

The holotype, allotype, and paratypes are in my collection; one paratype is in the Schedl collection.

Cnesinus bicornus, n. sp.

This species is closely related to *elegans* Blandford, but is readily distinguished by the much larger size, by the stouter body, by the broadly concave frons in both sexes, by the presence of interstitial granules on the elytral disc, and, in the female, by the much larger epistomal tubercles.

FEMALE.—Length 3.5 mm. (paratypes 3.3-3.8 mm.). 2.5 times as long as wide; color dark reddish-brown.

Frons rather deeply concave from eye to eye from vertex to epistoma, lateral margins acute below eye; epistoma armed by a pair of very large, pointed, conical spines, each longer than half of greatest width of eye; concavity on lower half with a pair of lateral calluses; surface substrigose-reticulate, with small, rather sparse, obscurely granulate punctures; vestiture fine, obscure, except a row of long and erect hairlike bristles on lateral margin; eyes separated by 2.7 times greatest width of an eye.

Pronotum 1.1 times as long as wide; sides almost straight on basal two-thirds, very slightly wider in front of middle, broadly rounded in front; surface longitudinally strigose, the punctures usually not evident, grooves dull, ridges shining; median line evident on posterior half; vestiture hairlike, inconspicuous except on all marginal areas.

Elytra 1.6 times as long as wide, 1.7 times as long as pronotum; sides almost straight and parallel to declivital base, rather broadly rounded behind; striae narrowly, not strongly impressed, the punctures small, impressed; interstriae three or more times as wide as striae, subcrenulate toward base, the remaining surface shining, not clearly punctured, irregular, with small rounded granules in somewhat indefinite uniseriate rows. Declivity rather steep, convex, except flattened between third interspaces; striae 1 strongly, 2 moderately, 3 not impressed; interspaces subshining, weakly convex, about four or five or more times wider than striae punctures, each interspace with a median row of rather large rounded granules. Vestiture hairlike, more abundant but not longer on declivity; con-

sisting of median rows of fine, erect interstitial hair, and more abundant, almost equally long, semirecumbent hair; the longest setae about equal to distance between rows.

MALE.—Similar to female except frontal excavation slightly shallower and less extensive; epistomal callus developed but unarmed.

TYPE LOCALITY.—Thirteen miles west of Morelia, Michoacan, Mexico.

TYPE MATERIAL.—The female holotype, male allotype, and 43 paratypes were collected at the type locality on June 15, 1965, at an elevation of about 2,300 m., by S. L. Wood, from small stems of a large herb 2-3 m. tall.

The holotype, allotype, and paratypes are in my collection.

Cnesinus foratus, n. sp.

Closely allied to *electus* Wood, but distinguished by the much more closely, coarsely, substrigose punctures of the pronotum, by the steeper, much less strongly impressed elytral declivity, and by the narrower male epistomal callus.

MALE.—Length 2.0 mm. (paratypes 2.0-2.1 mm.), 2.4 times as long as wide; color dark brown.

Frons transversely impressed at level of ocular emargination, convex above, flattened below this point; upper surface faintly, transversely strigose, shining, with sides reticulate (entire area reticulate in one paratype); lower area flattened, with a low, broad, triangular epistomal callus glabrous and shining below, a band of closely set, erect, reddish hair on upper slope, remaining area reticulate; glabrous except for epistomal brush and a single, sparse row of hair along lateral margin to upper level of eyes; eyes separated by a distance equal to about twice the greatest width of an eye.

Pronotum 1.04 times as long as wide; sides weakly arcuate on posterior half, widest at about middle, anterior margin broadly rounded; surface closely, coarsely, shallowly punctured, the punctures longitudinally confluent, the interspatial ridges occupying less than a third of surface; vestiture consisting of long, coarse bristles in marginal and median areas.

Elytra 1.6 times as long as wide, 1.7 times as long as pronotum; sides almost straight and parallel to declivital base, broadly rounded behind; striae impressed, the punctures partly obscured by confluence; interstriae somewhat wider than striae, surface irregular, the punctures rather small, somewhat uniseriate, subcrenulate toward base. Declivity steep, convex; striae 1 impressed, others indicated, the punctures reduced but distinct; interspaces as wide as striae, 1 slightly elevated and subgranulate, 2 and 3 and others with a row of moderately large, rounded granules. Vestiture consisting of long, stout (subscalelike), interstitial bristles from base to apex, distance between bristles and between rows slightly less than length of a bristle.

FEMALE.—Not represented in the material at hand.

TYPE LOCALITY.—El Bosque, Caicedonia, Valles, Colombia.

TYPE MATERIAL.—The male holotype and four male paratypes were collected at the type locality on June 23, 1959, by J. Restrepo, from dead branches. Two other male paratypes are from Finca la Tribuna, at the same locality, taken in May, 1959, by Gregorio Vargas from coffee berries.

The holotype and paratypes are in my collection.

Cnesinus electinus, n. sp.

Very closely related to *electus* Wood but eyes much more widely separated and epistomal callus and brush more elaborately developed.

MALE.—Length 2.4 mm. (paratypes 2.1-2.5 mm.), 2.7 times as long as wide; color dark brown, the elytra somewhat lighter.

Frons transversely impressed at level of eye emargination, flattened below, and convex above that point; epistomal callus broad, low, lower margin abrupt, precipitous, small triangular median area impunctate and glabrous, remaining area densely covered by a plush stand of erect, reddish bristles; convex area almost smooth, subshining, impunctate except at sides and above; vestiture scanty, limited to lateral areas except for epistomal brush; eyes separated by a distance slightly more than twice the greatest width of an eye.

Pronotum 1.1 times as long as wide; sides almost straight and parallel on anterior two-thirds, very slightly wider in front of middle, anterior margin broadly rounded; surface smooth and shining, with rather numerous, minute points and moderately large, deep, oval punctures, the punctures separated by about one-half to three times their own diameters, none confluent; vestiture sparse, inconspicuous, confined to marginal areas.

Elytra 1.7 times as long as wide, 1.7 times as long as pronotum; striae impressed, the punctures moderately large, deep; interstriae about twice as wide as striae, convex, the punctures small and staggered in indefinite, uniseriate rows, the punctures granulate on 2 and 3 near declivity and on 1 behind middle of disc. Declivity steep, impressed between third interspaces; striae 1 strongly impressed, others not impressed, the punctures moderately large and deep; interspace 1 somewhat elevated, 3 convex, 1 with fine punctures, 2 and 3 with moderately large, rounded granules. Vestiture almost restricted to declivity, consisting of uniseriate rows of erect bristles on all interspaces except 1, each bristle one to two times as long as distance between rows of bristles.

FEMALE.—Similar to male except epistomal callus and brush more poorly developed.

TYPE LOCALITY.—Fifteen miles south of Mazamitla, Jalisco, Mexico.

TYPE MATERIAL.—The male holotype, female allotype, and 28 paratypes were collected at the type locality on June 22, 1965, at an

elevation of about 2,400 m., by S. L. Wood, from twigs of a small tree.

The holotype, allotype, and paratypes are in my collection.

Cnesinus niger, n. sp.

This species is rather closely allied to *panamensis* Blackman, but is readily distinguished by the dorsad extension of the frontal impression, by the deeper, nonconfluent stria punctures on the elytral disc, by the more finely sculptured elytral interspaces, and by the much smaller punctures of all declivital striae.

MALE.—Length 2.0 mm. (paratypes 2.0-2.5 mm.), 2.6 times as long as wide; color almost black.

Frons convex above, transversely impressed at level of ocular emargination, lower half of area between impression and epistoma bearing an elevated callus, the callus almost reaching lateral margins, sharply defined above, densely pubescent on its upper slope, with a small, median, glabrous, triangular area below; surface subreticulate, shining, punctures not evident below upper level of eyes; vestiture limited to callus and a few inconspicuous setae along sides. Eyes separated above by a distance equal to about two and one-half times the greatest width of an eye.

Pronotum 1.04 times as long as wide; widest just behind middle; surface almost smooth and shining, the punctures small, rather close, almost round at base, each puncture becoming elongate anteriorly but not more than twice as long as wide, rarely confluent; glabrous behind, a few short setae on anterior third.

Elytra 1.7 times as long as wide, twice as long as pronotum; sides straight and subparallel on more than basal half, rather narrowly rounded behind; striae impressed, the punctures large, deep, clearly separated from one another; interstriae as wide as striae, the punctures fine, shallow, not strongly confused, surface subshining. Declivity rather steep, convex; interspace 1 distinctly elevated, median half of 2 flat, impressed (less obvious on left side), lateral half narrowly convex, 3 narrowly convex, 2 and 3 each bearing a row of fine granules. Vestiture confined to declivity, consisting of interstitial rows of moderately long, stout bristles, except missing on lower two-thirds of 1.

FEMALE.—Similar to male except frontal callus and brush greatly reduced.

TYPE LOCALITY.—Cerro Punta near Volcan Baru (or Chiriqui), Panama.

TYPE MATERIAL.—The male holotype, female allotype, and 41 paratypes were taken at the type locality on January 11, 1964, at an elevation of 1,800 m. by S. L. Wood, from the twigs of three different tree species.

The holotype, allotype, and most of the paratypes are in my collection; one paratype is in the Schedl collection.

Cnesinus myelitis, n. sp.

This species is allied to *punctatus* Blandford, but may be distinguished by the smaller size, by the more slender form, by the larger, more shallow punctures of the pronotum, and by frontal and elytral characters.

MALE.—Length 2.4 mm. (paratypes 2.0-2.4 mm.), 2.4 times as long as wide; color dark brown.

Frons transversely impressed at level of ocular emargination, convex above and flattened below this point; upper surface minutely, transversely aciculate to upper level of eyes, lower area subreticulate and with a large, broad epistomal callus covered by a brush of rather long, erect, reddish bristles, the entire callus setiferous, smaller and less strongly elevated than in *punctatus*.

Pronotum 1.05 times as long as wide; sides feebly arcuate on basal two-thirds, very slightly wider in front of middle, anterior margin rather broadly rounded; surface subshining, evidently with very minute points and moderately large, shallow, oval punctures, the punctures largely confluent on anterior half, rather widely separated on posterior half; subglabrous.

Elytra 1.5 times as long as wide, 1.6 times as long as pronotum; sides straight and parallel on anterior two-thirds, rather broadly rounded behind; striae rather strongly impressed, the punctures moderately large, deep; interstriae about twice as wide as striae, convex, the punctures uniseriate, fine in middle area, subcrenulate toward base, forming rather large rounded granules on posterior half of 1 and posterior fourth of 2 and 3. Declivity rather steep, convex; striae 1 strongly impressed, others not impressed; interstriae 1 convex, punctured except at top, 2 higher than 1 (except median half on right side) and bearing a row of rather large, rounded granules, 3 as high as 2 and similarly armed. Vestiture almost limited to declivity, except on interspace 1, consisting of interstitial rows of erect, tapered bristles, absent on lower three-fourths of 1; each bristle about one and one-half to two times as long as distance between rows.

FEMALE.—Similar to male except epistomal callus and brush poorly developed.

TYPE LOCALITY.—Five miles northeast of Teziutlan, Puebla, Mexico.

TYPE MATERIAL.—The male holotype, female allotype, and 16 paratypes were collected at the type locality on June 27, 1953, at an elevation of 1,500 m., by S. L. Wood, from a woody vine less than 1 cm. in diameter.

Cnesinus colombianus, n. sp.

Although not closely related, this species is more closely allied to *punctatus* Blandford than other species known to me. It may be distinguished from Blandford's species by the larger size, by the different sculpture of the epistomal callus, by the more coarsely sculp-

tered pronotum, by the granulate interspace 1 on elytral declivity, and by other characters.

MALE.—Length 2.9 mm. (paratypes 2.8-3.2 mm.), 2.3 times as long as wide; color dark reddish-brown with elytra somewhat lighter.

Frons transversely impressed at level of ocular emargination, convex above and flattened below this point; surface above completely smooth and brightly shining, with a few minute punctures laterally and toward vertex, lower area largely covered by a dense brush of reddish bristles, reticulate and punctured at sides; pubescent area with a low, sharply elevated, median carina, this carina divided on lower third of flattened areas and the two branches continued as an epistomal carina below brush but distinctly above epistomal margin, subhorizontal arms of carina smooth, shining, glabrous. Eyes separated by a distance equal to 2.2 times the greatest width of an eye.

Pronotum 0.95 times as long as wide; sides feebly arcuate on basal two-thirds, widest in front of middle, broadly rounded in front; surface coarsely, deeply punctured, most punctures longitudinally confluent except at base; vestiture restricted to marginal areas.

Elytra 1.5 times as long as wide, 1.7 times as long as pronotum; sides almost straight and parallel on basal two-thirds, rather narrowly rounded behind; striae impressed, the punctures obscured by confluence; interspaces about twice as wide as striae, surface irregular, the punctures small, confused, some finely granulate on their anterior margins. Declivity steep, convex, narrowly flattened on lower half; striae impressed, the punctures clearly evident; interstriae slightly wider than striae, convex, 1 and 3 very slightly higher than 2, each uniseriately, rather finely granulate with some punctures intermixed. 1 and 2 reaching almost to apex, 3 joining 5 and ending before 2, 4 ending just below middle of declivity. Vestiture confined to a few scattered bristles in lateral area of declivity.

FEMALE.—Similar to male except epistomal brush reduced, and median frontal carina absent.

TYPE LOCALITY.—El Bosque, Caicedonia, Valles, Colombia.

TYPE MATERIAL.—The male holotype, female allotype, and 24 paratypes were collected at the type locality on June 23, 1959, by J. Restrepo, from dead branches.

The holotype, allotype, and paratypes are in my collection.

Cnesinus retifer, n. sp.

This species is allied to *gracilis* Blandford, but is readily distinguished by the very strongly convex frons, by the completely reticulate pronotum and elytra, and by the confluent punctures of the declivital striae.

ADULT.—Presumably a male, length 2.0 mm. (paratypes 1.9-2.0 mm.), 2.9 times as long as wide; color very dark brown, almost black.

Frons strongly convex almost to epistoma; surface coarsely reticulate, with minute, rather sparse granules; vestiture short, sparse, inconspicuous. Eye very feebly sinuate on anterior margin.

Pronotum 1.1 times as long as wide; widest two-fifths of length from anterior margin, sides straight and diverging from base, broadly rounded in front; a conspicuous, smooth, shining callus extending from anterolateral angles at widest point more than halfway toward median line just behind anterior margin; remainder of surface reticulate, dull, with rather large, shallow oval punctures in posterior area, and small, deep, elongate punctures anteriorly; anterior punctures often confluent, posterior punctures usually separate; glabrous.

Elytra 1.8 times as long as wide, 1.7 times as long as pronotum; sides straight and subparallel to base of declivity, rather narrowly rounded behind; striae moderately impressed, the punctures confluent; interstriae about one and one-half times as wide as striae, except 1 narrower, the punctures very fine, deep, uniseriate except at base of 3. Declivity convex, rather steep; interstriae narrower than striae, convex, 1 very slightly more strongly elevated. Vestiture confined to declivity, consisting of interstitial rows of flattened bristles; each bristle as long as distance between rows of bristles.

Only one sex represented in the type series.

TYPE LOCALITY.—Fort Clayton, Canal Zone, Panama.

TYPE MATERIAL.—The holotype and five paratypes were collected at the type locality on December 22, 1963, at an elevation of about 30 m., by S. L. Wood, from the central axis of an unknown vine that was about 0.5 cm. in diameter.

The holotype and paratypes are in my collection.

Cnesinus annectens, n. sp.

According to Schedl, this species is closely allied to *guadeloupensis* Eggers. The description of Eggers' species, however, indicates that the declivital interspace 2 is narrowed and eliminated before the elytral apex. In this species it is wider than either 1 or 3 and extends to the apex. The lack of anatomical specialization makes characterization of this species difficult; however, biologically it is unique, as noted below, in that it constructs egg tunnels in the cambium rather than in the central axis of the host.

FEMALE.—Length 2.3 mm. (paratypes 1.9-2.5 mm.). 2.2 times as long as wide; color brown with white vestiture.

Frons broadly impressed, almost concave, from upper level of eyes to epistoma, an obscure epistomal callus indicated; surface reticulate, obscurely below, coarsely above, with small indefinite punctures rather uniformly, not closely distributed; vestiture rather widely distributed in lateral areas, consisting of fine, long, yellow hair, much longer above, some setae equal to three-fourths the distance between eyes; distance between eyes equal to twice greatest width of an eye.

Pronotum 0.93 times as long as wide; very slightly wider at base, sides very feebly arcuate on about basal two-thirds, broadly rounded

in front; surface coarsely, not deeply punctured, the punctures evidently reticulate, almost all confluent, the very narrow, irregular interspaces smooth, shining; median line narrow, weakly raised from anterior fourth to base; vestiture short, abundant, fine except almost scalelike near all margins.

Elytra 1.4 times as long as wide, 1.7 times as long as pronotum; sides almost straight and parallel on basal two-thirds, rather broadly rounded behind; striae rather shallowly impressed, the punctures moderately large, deep; interspaces about twice as wide as striae, convex, the punctures small, numerous, subgranulate, in three obscure ranks. Declivity rather steep, laterally convex, impressed between third interspaces; striae and strial punctures impressed, not reduced; interstriae as wide as striae, with granules slightly larger than on disc, uniseriate, 1 and 2 continuing to apex, 3 obscured on lower third. Vestiture abundant, erect, consisting of stout interstitial bristles, median row on each interspace a third longer than ground cover, but shorter than distance between rows.

MALE.—Similar to female except frontal impression shorter, not as deep, the frontal vestiture much shorter.

TYPE LOCALITY.—Zamorano, Morazan, Honduras.

HOST.—*Verbisina agricolorum*.

TYPE MATERIAL.—The female holotype, male allotype, and 116 paratypes were collected at the type locality on April 18, 1964, at an elevation of 700 m., by S. L. Wood, from the lower parts of green stems about 1-3 cm. in diameter of the host plant.

The holotype, allotype, and most of the paratypes are in my collection; two paratypes are in the Schedl collection.

HABITS.—The egg tunnel was cut in the cambium region about half in the xylem and half in the phloem tissues. It was small and rather broad, much as in most *Scolytodes* species, with about three to eight large egg niches placed along one or more sides. The eggs were mixed with frass and packed into these niches. The larvae fed more or less in congress in the phloem tissues, scarcely engraving wood, until approximately the second instar was completed. The female parent in most of the older galleries had cut a tunnel from the egg chamber to the pith along the central axis of the stem. All third instar larvae present were in these pith tunnels. Larvae older than the third instar were not present in the material studied. After cutting the pith tunnel the parent adults appeared to abandon the tunnels, evidently to begin a second brood.

Cnesinus adusticus, n. sp.

This species is very similar to *adustus* Schedl, but is distinguished by the larger size, by the widely separated eyes, by the slightly deeper impression of the elytral declivity, and by the more deeply impressed striae 1 on declivity. Males only compared; an authentic female of *adustus* not at hand.

FEMALE.—Length 2.9 mm. (paratypes 2.6-3.3 mm.), 2.4 times as long as wide; color reddish-brown, with white and cinereous vestiture.

Frons with an arcuate, sharply elevated, transverse carina at level of ocular emargination occupying median third; weakly convex above, flattened below carina; most of lower area covered by a brush of erect reddish bristles; upper area minutely, transversely strigose, punctured and granulose at sides and above; lateral areas above carina and below upper level of eyes bearing rather abundant, long, erect, plumose, yellow setae; eyes separated by a distance equal to 1.6 times the greatest width of eye (1.0 times in male *adustus*).

Pronotum 1.05 times as long as wide; widest in front of middle, the sides weakly arcuate, rather broadly rounded in front; surface longitudinally rather coarsely strigose, most punctures confluent; vestiture scanty except in marginal areas, partly scalelike at base and near anterior margin.

Elytra 1.5 times as long as wide, 1.5 times as long as pronotum; striae impressed, the punctures rather large, very close; interstriae about one and one-half times as wide as striae, surface irregular, the punctures confused, some median ones partly granulate. Declivity moderately steep, impressed between third interspaces; striae not impressed, the punctures rather large, deep; intrstriae 1 rather weakly elevated, 2 impressed, essentially flat, 3 and evidently part of lateral area forming a rather abrupt, moderately high crest, the lateral interspaces ending in this rounded summit, declining and obsolete before apex; each interspace bearing a row of small setiferous granules. Vestiture fine, almost hairlike on anterior two-thirds of disc, becoming coarse and scalelike behind; consisting of rather abundant, short interstitial setae and median rows of longer, erect setae, none as long as distance between rows.

MALE.—Similar to female except frontal carina absent, upper area more strongly convex, reticulate, lower area more broadly flattened; epistomal brush somewhat reduced, yellow.

TYPE LOCALITY.—Los Amendros, Paraiso (near Zamorano), Honduras.

HOST.—*Acacia pennatula*.

TYPE MATERIAL.—The female holotype, male allotype, and 37 paratypes were collected at the type locality on April 18, 1964, at an elevation of about 700 m., by S. L. Wood, from tunnels in the central axis of branches of the above host 0.5-4.0 cm. in diameter.

The holotype, allotype, and most of the paratypes are in my collection; two paratypes are in the Schedl collection.

Cnesinus carinatus, n. sp.

Very close to *flavopilosus* Schedl, but distinguished by the more widely separated eyes, by the more coarsely strigose pronotum to base, by the much finer, essentially hairlike elytral pubescence, by the female frons being slightly inflated and pubescent in the median

area above the frontal carina, and by the male frons being much more strongly, subconvexly impressed on a much larger area.

FEMALE.—Length 2.7 mm. (paratypes 2.5-3.1 mm.). 2.7 times as long as wide; color brown.

Frons with a transverse carina at level normally occupied by occular emargination in this genus, rather weakly convex above, flattened below this point; surface above and below carina reticulate, finely punctured and pubescent; vestiture above yellow, shorter in median area, below carina reddish, erect, arranged in a transverse brush as in *flavopilosus*, not reaching epistomal margin; eyes separated by a distance equal to 2.3 times greatest width of eye. Eye entire.

Pronotum 1.09 times as long as wide; sides almost straight on basal two-thirds, very slightly wider in front of middle; surface rather coarsely, longitudinally strigose to base; vestiture confined to marginal areas.

Elytra 1.8 times as long as wide, 2.0 times as long as pronotum; sides almost straight and parallel to base of declivity, broadly rounded behind; striae impressed, the punctures small, impressed; interstriae about twice as wide as striae, convex, surface somewhat irregular, the punctures fine, confused, median row evidently subgranulate. Declivity steep, rather strongly impressed between third interspaces as in *flavopilosus*; striae 1 moderately impressed, others not impressed, the punctures reduced; interspace 1 convex, moderately elevated, 2 impressed, elevated laterally, the elevation continuing to moderately high summit on 3, each interspace with a row of fine granules. Vestiture hairlike, those on median row of each interspace longer, particularly on declivital interspace 3 and laterally.

MALE.—Similar to female except frontal carina absent; frons concavely impressed on lower two-thirds of area below upper level of eyes, entire frons pubescent, but setae longer and more abundant at sides and along epistomal brush.

TYPE LOCALITY.—Four miles west of Ciudad Hidalgo, Michoacan, Mexico.

TYPE MATERIAL.—The female holotype, male allotype, and 14 paratypes were collected at the type locality on July 16, 1953, at an elevation of 2,000 m., by S. L. Wood, from twigs of a rosaceous tree.

The holotype, allotype, and paratypes are in my collection.

Leperisinus guatemalensis, n. sp.

This species is very closely related to *californicus* Swaine and eventually may prove to be a subspecies. It is distinguished by the presence of an almost complete submarginal row of small asperities just behind the anterior margin of the pronotum, by the smaller pronotal asperities, by the smaller crenulations along the elytral bases, and by the complete absence of a median frontal carina in the female.

FEMALE.—Length 3.0 mm. (paratypes 2.4-3.1 mm.), 1.8 times as long as wide; color as in *californicus* except the light scales usually luteous.

Frons more broadly flattened to upper level of eyes, more strongly convex above eyes, and devoid of median carina, otherwise as in *californicus*.

Pronotum with an almost continuous row of small submarginal asperities connecting groups of large anterolateral asperities, and asperities smaller, otherwise as in *californicus*.

Elytra with basal crenulations smaller, and general sculpture finer, otherwise as in *californicus*.

MALE.—Similar to female except frons shallowly concave; frontal sculpture variable, but evidently epistomal emargination wider than *californicus*.

TYPE LOCALITY.—Volcan Pacaya, Esquintla Prov., Guatemala.

TYPE MATERIAL.—The female holotype, male allotype, and 90 paratypes were collected at the type locality on June 1, 1964, at an elevation of about 1,300 m., by S. L. Wood, from cut branches of three very different host species none of which resembled *Frazinus*. The transverse biramous egg galleries were typical of the genus.

The holotype, allotype, and paratypes are in my collection.

Chramesus incomptus, n. sp.

This species resembles other species of *Chramesus* only in the antennal club. It has a slender form, a unique sculpture of the pronotum, fine vestiture, and a sculpture of the male frons not found elsewhere in the genus. Tentatively, it is placed in the subgenus *Prochramesus* although it exhibits much more primitive characters than other species placed there.

MALE.—Length 2.0 mm. (paratypes 1.9-2.1 mm.). 2.3 times as long as wide; body color brown.

Frons strongly, transversely impressed just below middle, upper area flattened to vertex, lower area strongly raised to epistoma, lateral areas rounded, unarmed; epistomal lobe conspicuous, with a pair of small tubercles at its base; surface reticulate, with small deep punctures at sides and above; vestiture fine, short, somewhat more abundant at sides and above, rather inconspicuous. Antennal club rather small, apically pointed.

Pronotum 0.9 times as long as wide; widest about one-third of pronotum length from base, the sides moderately arcuate, distinctly constricted just behind anterior margin; surface minutely granulate and with small, moderately close, shining, rounded granules; vestiture consisting of rather long, moderately abundant hair.

Elytra 1.35 times as long as wide, 1.7 times as long as pronotum; sides almost straight on basal two-thirds, very slightly wider posteriorly, broadly rounded behind; striae rather weakly impressed, the punctures rather large, deep; interstriae slightly wider than striae, weakly convex, surface irregular, the punctures rather numerous, confused, most granulate or subgranulate on anterior side; interspace 2 subcrenulate to well behind base. Declivity rather steep, broadly convex; only striae 1 weakly impressed, the punctures some-

what reduced in size; interstriae almost smooth, 3 and upper third of 1 and 2 with sparse, uniseriate, rounded granules. Vestiture moderately long, largely abraded, consisting of coarse, delicate, hairlike setae, toward declivity median interstitial rows becoming distinctly longer than similar, shorter, ground vestiture.

FEMALE.—Similar to male except frons irregularly convex with an indefinite, subfoveate, median impression, surface reticulate-granulate; epistomal tubercles present; elytral declivity more narrowly convex, the interstitial tubercles on 2 and especially 1 extending to middle or below.

TYPE LOCALITY.—Twenty-one miles west of Morelia, Michoacan, Mexico.

HOST.—*Clematis* sp.

TYPE MATERIAL.—The male holotype, female allotype, and 15 paratypes were collected at the type locality on June 16, 1965, at an elevation of about 2,200 m., by S. L. Wood, from tunnels in the cambium region of stems of the above vine larger than 1 cm. in diameter. The biramous tunnels were diagonal; usually two females were associated with each male.

The holotype, allotype, and paratypes are in my collection.

Chramesus bicolor, n. sp.

This is the only species in the genus having a sharply defined, scale, color pattern. It evidently is allied more closely to *crenatus* Wood than to other species; however, it differs by the more deeply punctured pronotum, by the larger scutellum and scutellar notch, by the deep stria punctures and by other characters.

MALE.—Length 1.5 mm. (paratypes 1.4-1.7 mm.), 1.6 times as long as wide; body color very dark brown, with white scales except dark scales on a subcordate area occupying median third of pronotum anterior to basal fourth, and on elytra a pair of dark areas on posterior half of disc from interspace to 2 to 8 but not extending on declivity.

Frons broadly excavated from vertex to epistoma, the lateral margins below eye acute, armed just below level of antennal base by a pair of small teeth; surface reticulate, punctures very fine; vestiture short, sparse.

Pronotum 0.83 times as long as wide; widest at base, the sides arcuately converging, then distinctly constricted just behind the broadly rounded anterior margin; surface rather coarsely and deeply punctured, dull; surface largely obscured by scalelike vestiture, each scale at least four times as long as wide, a few slender bristles intermixed.

Elytra 1.0 times as long as wide, 1.3 times as long as pronotum; sides straight and parallel on basal half, broadly rounded behind; striae somewhat impressed, the punctures large, rather deep; interstriae slightly wider than striae, moderately convex, the punctures squamiferous, confused, the median row subvulcanate, largely ob-

sured by the vestiture. Declivity steep, convex; sculpture as on disc except striae and interstriae somewhat narrower. Vestiture consisting of short, broad scales, each scale as wide as long, and median interstitial rows of erect longer scales, each about five times as long as wide and almost as long as distance between rows of scales.

FEMALE.—Similar to male except frons weakly convex, unarmed; anterolateral areas of pronotum more coarsely asperate.

TYPE LOCALITY.—La Lima, Cortez, Honduras.

HOST.—*Cestrum scandens*.

TYPE MATERIAL.—The male holotype, female allotype, and 61 paratypes were collected at the type locality on May 5, 1964, at an elevation of about 50 m., by S. L. Wood, from stems of the above host less than 0.5 cm. in diameter.

The holotype, allotype, and paratypes are in my collection.

Chramesus vastus, n. sp.

This species differs from all others in the genus known to me by its large size, by the sculpture of the pronotum, and by the scalelike ground vestiture of the elytra with median interstitial rows of longer, hairlike setae.

MALE.—Length 2.4 mm. (paratypes 2.4-2.7 mm.), 1.7 times as long as wide; color dark brown.

Frons broadly, shallowly excavated, the lateral margins acutely, rather strongly elevated and armed just below level of antennal insertion by a pair of tubercles; epistomal margin moderately, gradually elevated; surface coarsely reticulate, with fine punctures on marginal areas; vestiture inconspicuous.

Pronotum 0.8 times as long as wide; widest just behind middle, the sides strongly arcuate, moderately constricted just behind anterior margin, broadly rounded in front; surface reticulate, dull, with numerous small, isolated, shining asperities uniformly distributed from base to anterior margin; vestiture consisting of short, sparse, coarse hair.

Elytra 1.1 times as long as wide, 1.6 times as long as pronotum; sides straight and parallel on basal half, broadly rounded behind; striae 1 and 2 deeply, others moderately impressed, the punctures small, subconfluent on 1 and 2; interstriae about twice as wide as striae, weakly convex, the punctures shallow, minute, and each with a median row of large tubercles except small on base of 1 and a partial double row at base of 2. Declivity rather steep, convex; striae and interstriae narrower than on disc; the tubercles narrower and higher, except absent on lower half of interstriae 1 and 2. Vestiture consisting of very small, abundant scales, each scale slightly longer than wide except hairlike along suture, and median rows of erect, interstitial, hairlike bristles, each bristle slightly shorter than distance between rows.

FEMALE.—Similar to male except frons convex; pronotum with punctures on disc impressed and feebly or not at all asperate toward base. lateral areas more strongly asperate than in male; elytral striae more deeply impressed, interstrial tubercles continuing to apex on 1 and 2.

TYPE LOCALITY.—Cerro Punta, Chiriqui Prov., Panama.

HOST.—*Inga* sp.

TYPE MATERIAL.—The male holotype, female allotype, and 17 paratypes were collected at the type locality on January 11-19, 1964, at an elevation of about 2,000 m., from branches of the species of *Inga* common on the hills west of Rio Viejo. The egg and larval mines were in the woody tissues.

The holotype, allotype, and paratypes are in my collection.

Chramesus demissus, n. sp.

Somewhat intermediate between *vastus* Wood (above) and *tumidulus* Blandford. It may be distinguished from *tumidulus* by the reticulate, sparsely asperate pronotum, by the much larger elytral tubercles, and by the less abundant elytral ground vestiture. From *vastus* it is distinguished by the smaller size, by the less deeply impressed, wider elytral striae, and by the very shallowly impressed male frons.

MALE.—Length 2.1 mm. (paratypes 2.0-2.3 mm.), 1.7 times as long as wide; color dark brown.

Frons irregularly flattened, the lateral margins weakly elevated and armed by a pair of very small granules below level of antennal insertion; surface rather coarsely reticulate, the punctures minute; vestiture short, inconspicuous.

Pronotum 0.8 times as long as wide; widest behind middle, sides strongly arcuate, moderately constricted behind the narrowly rounded anterior margin; surface reticulate, dull, with rather numerous small, isolated asperities uniformly distributed, except median basal area, with fine, shallow punctures; vestiture consisting of sparse, slender scales.

Elytra 1.1 times as long as wide, 1.6 times as long as pronotum; sides straight and parallel on slightly more than basal half, broadly rounded behind; striae moderately impressed, the punctures rather large, deep; interstriae wider than striae, essentially smooth, the punctures very fine, each with a uniseriate row of coarse tubercles, interspace 2 with double row of tubercles at base. Declivity steep, convex; declivital granules smaller than on disc. Vestiture consisting of small scales on posterior part of disc and on declivity, each scale longer than wide; and median rows of erect, interstrial bristles, each bristle slightly shorter than distance between rows of bristles.

FEMALE.—Similar to male except lateral margins of frons not elevated.

TYPE LOCALITY.—Volcan Pacaya, Esquintla Prov., Guatemala.

TYPE MATERIAL.—The male holotype, female allotype, and 11 paratypes were collected at the type locality on June 1, 1964, at an elevation of 1,300 m., by S. L. Wood, from small twigs of an unknown tree seedling.

The holotype, allotype, and paratypes are in my collection.

Chramesus punctatus, n. sp.

This species is closely related to *demissus* Wood, described above, but is readily distinguished by the very coarse stria punctures and interstitial granules, by the longer declivital bristles on the elytra (except usually absent on interspace 2), and by the deeper frontal excavation of the male.

MALE.—Length 1.9 mm. (paratypes 1.5-2.1 mm.), 1.7 times as long as wide; color dark brown.

Frons broadly, rather deeply excavated from upper level of eyes to epistoma, the lateral margins rather strongly, acutely elevated and armed by a pair of small tubercles just below level of antennal bases; vestiture inconspicuous. Antennal scape with a small tuft of hair.

Pronotum 0.8 times as long as wide; widest on basal fourth, the sides moderately arcuate, feebly constricted just behind the narrowly rounded anterior margin; surface reticulate, dull, with numerous small, isolated, shining asperities and in posteromedian area with a few small punctures; vestiture consisting of short, semirecumbent bristles.

Elytra 1.1 times as long as wide, 1.5 times as long as pronotum; sides straight and parallel on more than basal half, broadly rounded behind; striae moderately impressed, the punctures very large, deep; interstriae about as wide as striae, convex, irregular, the punctures minute, each interspace with a row of very coarse, isolated tubercles. Declivity moderately steep, broadly convex; striae and interspaces somewhat narrower; interspaces 2 and 4 devoid of tubercles (some paratypes have one or more on each). Vestiture consisting of numerous small scales on declivity, and median interstitial rows of erect bristles from base to apex; each bristle as long as distance between rows of bristles and between adjacent bristles in a row; declivital interspaces 1 and 4 (usually) devoid of bristles (in a few paratypes both bear one or more bristles).

FEMALE.—Similar to male except frons weakly convex.

TYPE LOCALITY.—Volcan Pacaya, Esquintla, Guatemala.

HOST.—A vine, evidently *Canavalia* sp.

TYPE MATERIAL.—The male holotype, female allotype, and 90 paratypes were collected at the type locality on June 1, 1964, at an elevation of about 1,300 m., by S. L. Wood, from a vine thought to be *Canavalia* sp.; 29 additional paratypes bear similar data but were taken 14 km. west of Guatemala City, on May 30, 1964, from the same host.

The holotype, allotype, and paratypes are in my collection.

Phloeotribus simplex, n. sp.

This species is more closely related to *opimus* Wood than to other representatives of the genus known to me, but may be distinguished by its much more finely sculptured pronotum and elytra, by the reticulate surface of the pronotum, by the longer vestiture, and by other characters.

FEMALE.—Length 1.5 mm. (paratypes 1.4-1.7 mm.), 2.1 times as long as wide; color brown.

Frons convex, with a transverse callus at level of antennal insertion; surface coarsely reticulate, with rather coarse, deep, moderately abundant punctures; vestiture inconspicuous. Antennal club with segment 1 about twice as wide as long.

Pronotum 0.9 times as long as wide; widest one-fourth from base, sides feebly arcuate on basal half, rather strongly constricted just behind broadly rounded anterior margin; surface unarmed, reticulate, the punctures small, deep, separated by distances of one to three times the diameter of a puncture; vestiture consisting of short, fine, and longer, coarse, hairlike setae.

Elytra 1.3 times as long as wide, 1.7 times as long as pronotum; basal crenulations in a single row, rather high; striae not impressed, the punctures deep, coarse; interstriae as wide as striae, almost flat and smooth with median rows of small setiferous granules. Declivity steep, convex, rather narrow; striae and interstriae narrower than on disc. Vestiture consisting of rows of fine, recumbent, strial hair, and longer, erect, uniseriate rows of interstitial bristles, each bristle somewhat flattened at its apex and spaced in the rows and between rows by distances about equal to length of a bristle.

MALE.—Not represented in the series at hand.

TYPE LOCALITY.—Fort Clayton, Canal Zone, Panama.

TYPE MATERIAL.—The female holotype and 6 paratypes were collected on December 22, 1963, at an elevation of about 30 m., by S. L. Wood, from the inner tissues of a large vine about 5 cm. in diameter. Six other paratypes were taken at Barro Colorado Island, Panama Canal Zone, on December 27, 1963, at an elevation of about 60 m., by S. L. Wood, from the same species of vine. *Scolytus nodatus* also infested this same species of vine.

Chaetophloeus minimus, n. sp.

The small size and vestiture of this species are more nearly like *Liparthrum* than other species in this genus, but the antennal and other characters clearly place it in *Chaetophloeus*. It is allied to *mexicanus* (Blackman), but may be distinguished by the smaller size, by the more slender form, by the less strongly impressed striae, by the vestiture, and by the less strongly impressed male frons.

MALE.—Length 1.2 mm. (paratypes 1.1-1.4 mm.), 1.9 times as long as wide; color almost black, with white vestiture.

Frons shallowly concave from eye to eye and from epistoma to vertex; surface reticulate-granulate, vestiture consisting of moderate-

ly long, coarse hair, more abundant and longer at sides and above. Antennal club large. 1.8 times as long as wide; three sutures indicated.

Pronotum 0.6 times as long as wide; widest one-fourth of pronotum length from base, sides moderately arcuate on basal half, rather weakly constricted just behind anterior margin; surface subreticulate-granulate, with moderately large, obscure punctures; lateral area armed by one paired group of asperities; vestiture consisting of short, stout, hairlike bristles and equally abundant, erect scales, each scale as wide as long.

Elytra 1.3 times as long as wide, 2.0 times as long as pronotum; basal crenulations as in *mexicanus*, with two pair of submarginal ones on interspaces 1 and 2; striae not impressed, the punctures moderately large, deep; interstriae feebly convex, as wide as striae, the punctures fine, confused. Declivity steep, convex; striae and interstriae somewhat narrower than on disc, the interstitial punctures evidently subgranulate. Vestiture consisting of short, slender interstitial bristles along each interspatial margin, and median, interstitial rows of erect, round scales; scales separated within a row by distances equal to length of a scale, and between rows by distances equal to twice the length of a scale.

FEMALE.—Similar to male except frons weakly convex, minutely granulate, the vestiture short, sparse; pronotum armed by two pairs of groups of asperities.

TYPE LOCALITY.—Two miles east of Armeria, Colima, Mexico.

TYPE MATERIAL.—The male holotype, female allotype, and 15 paratypes were collected at the type locality on June 28, 1965, at an elevation of about 60 m., by S. L. Wood, from an unidentified, thornless shrub with simple leaves.

The holotype, allotype, and paratypes are in my collection.

Chaetophloeus struthanthi, n. sp.

This species is closely related to *phoradendri* Wood, but is readily distinguished by the shorter, erect, elytral scales, by the more strongly convex, granulate, female frons, by the shorter, yellow pubescence on upper part of male frons, and by the smaller, mandibular processes in both sexes.

MALE.—Length 1.7 mm. (paratypes 1.6-1.9 mm.). 1.6 times as long as wide; color very dark brown.

Frons shallowly concave from eye to eye and from vertex to the broadly emarginate epistomal margin; surface with rather close, fine, subgranulate punctures; vestiture largely confined to marginal areas, longer on upper margin, but longest hairs not reaching epistoma, yellow. Antennal club 2.1 times as long as wide; sutures very obscure.

Pronotum 0.6 times as long as wide; widest one-fourth of pronotum length from base, sides very strongly arcuate on basal half.

moderately constricted just behind the broadly rounded, subemarginate, anterior margin; surface subrugulose, rather finely, closely punctured, lateral areas armed by three pairs of groups of asperities; vestiture consisting of short, erect scales, about eight much longer ones in median basal area.

Elytra 1.1 times as long as wide, 2.1 times as long as pronotum; outlines and basal asperities as in *phoradendri*; striae weakly impressed, the punctures rather small, shallowly, distinctly impressed; interspaces convex, about twice as wide as striae, the setiferous punctures small, confused. Declivity convex, steep; striae and interstriae narrower and less clearly marked than on disc. Vestiture consisting of short, semierect, small, slender scales of equal length on disc, median row on each interspace slightly longer on declivity.

FEMALE.—Similar to male except frons convex above, flattened below, more nearly granulate; mandibular process reduced; antennal club 1.7 times as long as wide.

TYPE LOCALITY.—Volcan de Colima, Jalisco, Mexico.

HOST.—*Struthanthus*, probably *venetus*.

TYPE MATERIAL.—The male holotype, female allotype, and 86 paratypes were collected at the type locality on June 23, 1965, at an elevation of about 2,500 m., by S. L. Wood, from the above mistletoe that grew in an oak tree.

The holotype, allotype, and paratypes are in my collection.